PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A 197 PCT	**FOR FURTHER ACTION** See Form PCT/IPEA/416	
International application No. PCT/SE2004/001182	International filing date *(day/month/year)* 12.08.2004	Priority date *(day/month/year)* 13.08.2003
International Patent Classification (IPC) or national classification and IPC F24F 13/068		
Applicant Airson AB et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 43 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:

   a. ☒ *(sent to the applicant and to the International Bureau)* a total of 5 sheets, as follows:

      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))

      _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

   ☒ Box No. I Basis of the report
   ☐ Box No. II Priority
   ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   ☐ Box No. IV Lack of unity of invention
   ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   ☐ Box No. VI Certain documents cited
   ☐ Box No. VII Certain defects in the international application
   ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
11.03.2005	15.11.2005
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Helene Eliasson / JA A Telephone No. +46 8 782 25 00

Form PCT/IPEA/409 (cover sheet) (April 2005)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/SE2004/001182

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

☐ the international application as originally filed/furnished

☒ the description:

pages 2-7 as originally filed/furnished
pages* 1 (obvious error corrected) received by this Authority on 2005-03-11
pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished
pages* 12-15 } same as amended (together with any statement) under Article 19
pages* 12-15 received by this Authority on 2005-03-11
pages* _____ received by this Authority on _____

☒ the drawings:

pages 1-3 as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing *(specify)*: _____
- ☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing *(specify)*: _____
- ☐ any table(s) related to the sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/SE2004/001182

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-22	YES
	Claims		NO
Inventive step (IS)	Claims	1-22	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-22	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The invention refers to an air supply device and is aimed at achieving clean air in spaces and making a turbulent zone around a clean-air zone more narrow so that the turbulence around said clean-air zone becomes less.

Documents cited in the search report:
D1 SE 516775
D2 DE2608792

The cited documents represent the general state of the art.
The invention defined in claims 1-22 is not disclosed by any of these documents.
The cited prior art does not give any indication that would lead a person skilled in the art to the combination stated in claim 1, that is the outer part of the described air supply device provided with passages with a length at least four times greater than their width in order to make the turbulence around the clean-air zone less. Accordingly, the invention defined in claims 1-22 is novel and is considered to involve an inventive step. The invention is industrially applicable.

Claims:

1. Air supply device for obtaining zones of clean air in premises, said air supply device (1) comprising at least one air permeable body (11) including at least one inner and at least one outer part (12, 13) of which the inner part (12) consists of or includes porous material,

wherein at least one fan device (22) is provided to bring air (A), which is to be supplied to the premises (2), to flow through the air permeable body (11) at low air velocity,

wherein at least one device (23) is provided to see to that the air (A) supplied to the premises (2) has a lower temperature than the air in said premises (2), and

wherein the air permeable body (11), in cross section, has the shape of parts of a circle or substantially a circle or primarily parts of a circle or substantially a circle,

c h a r a c t e r i z e d i n

the combination that the inner part (12) consists of or includes porous material and the outer part (13) has passages (16) which are substantially rectilinear, substantially uniform in thickness and located close to each other, said passages (16) further having a length (L) which is at least four times greater than their width (B) in order to generate rectilinear and uniformly distributed partial air streams (6a) for making a turbulent zone (7a) around the clean-air zone (7) more narrow so that the turbulence around the clean-air zone (7) hereby becomes less.

2. Air supply device according to claim 1, c h a r a c t e r i z e d i n that the length (L) of each passage (16) is 4-10 times greater than their width (B).

3. Air supply device according to claim 2, c h a r a c t e r i z e d i n that the length (L) of each passage (16) is 4-6 times greater than their width (B).

4. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n

that the passages (16) have a circular or substantially circular cross section, and

that they have the same or substantially the same diameter along their entire length (L).

5. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that all or almost all passages (16) are of equal length.

6. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the passages (16) are defined by tubes (17) which are located close to each other and connected to each other.

7. Air supply device according to claim 6, c h a r a c t e r i z e d i n that the tubes (17) are made of a plastic material.

8. Air supply device according to claim 6, c h a r a c t e r i z e d i n that the tubes (17) are made of a metallic material.

9. Air supply device according to claim 6, c h a r a c t e r i z e d i n that the tubes (17) are made of a ceramic material.

10. Air supply device according to any of claims 6-8, c h a r a c t e r i z e d i n that the tubes (17) are interconnected by fusing.

11. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the porous material (14) of the inner part (12) is designed to permit filtration of air flowing through said porous material in order to obtain a low content of particles in the premises (2).

12. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the porous material (14) of the inner part (12) consists of foamed plastic with open cells.

13. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the outer

part (13) is thicker than the inner part (12).

14. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the outer part (13) consists of a heat resistant material.

15. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the inner and outer parts (12, 13) are connected to each other.

16. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the body (11) is in cross section shaped as a semicircle or substantially as a semicircle.

17. Air supply device according to any of claims 1-15, c h a r a c t e r i z e d i n that the air permeable body (11) is in cross section shaped as a quarter of a circle or substantially as a quarter of a circle.

18. Air supply device according to any of claims 1-15, c h a r a c t e r i z e d i n that the air permeable body (11) is shaped as a spherical segment or as a substantially spherical segment.

19. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the device (23) which is provided to see to that the air (A) supplied to the premises (2) has a lower temperature than the air in said premises (2), is provided to supply air at such temperature that said air descends to a low level in the premises (2).

20. Air supply device according to any preceding claim,

wherein impure air is gathered in an upper zone (18) closest to the ceiling (9) of the premises (2), and

wherein at least one air outlet (19) for impure air is provided at the ceiling (9) of the premises (2),

c h a r a c t e r i z e d i n

that the air permeable body (11) is located beneath the upper zone (18) such that substantially no impure

air is coejected out of the upper zone (18) by the air streams (6) discharged by the air permeable body (11).

21. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the air permeable body (11) is located above a door (20) to the premises (2) and it is elongated and extends along at least a part of the width of the door (20).

22. Air supply device according to any preceding claim, c h a r a c t e r i z e d i n that the device (23) which is provided to see to that the air (A) supplied to the premises (2) has a lower temperature than the air in said premises (2), is a device for taking in cool air and/or includes a cooling device or is a cooling device for cooling air.

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Air supply device.

The present invention relates to an air supply device for obtaining zones of clean air in premises, said air supply device comprising at least one air permeable body including at least one inner and at least one outer part of which the inner part consists of or includes porous material.

US 5 167 577 and SE 516 775 both define air supply units having outer layers of porous material, which means that they discharge air streams which unguided flow out in different directions and thereby cause undesired turbulence. Therefore, these air supply devices do not provide clean-air zones of optimum purity.

EP 0 787 954 and DE 26 08 792 relate to conventional air distributors having demands upon good air distribution but without demands upon generating absolute pure zones of intake or supply air without admixture of surrounding impure air. These air distributors can provide a good air distribution with e.g. irregular air distribution within a larger area, which however does not mean that one can obtain a pure clean-air zone.

The object of the present invention is to provide a simple air supply device for obtaining a pure zone of intake air. This is arrived at by providing the air supply device with the characterizing features of subsequent claim 1.

The new air supply device is a simple device which is easy to keep clean and permits discharge of undertempered air, improved directional effect on the supplied air and a more uniform air distribution, which results in less coejection of impure surrounding air and thereby formation of a clean-air zone of optimum purity.

The invention will be further described below with reference to the accompanying drawings, in which

figure 1 is a side view of an air supply device according to the invention;